system's signal theft problem, and in no case exceeds the degree of signal theft in the market. Many Continental systems do no scrambling; others scramble only premium channels; others are forced to scramble one or more satellite-delivered channels. In some extremely high-theft areas, even one or more broadcast channels are scrambled, but fortunately, this practice is extremely rare.

Continental's scrambling choices reflect its best, market-specific judgement of the optimal balance between security and consumer friendliness. The choice varies based upon the theft rate of the various markets, and defies any one-size-fits-all solution. The 1992 Act does not suggest that scrambling be outlawed. Indeed, the Conference rejected an alternative version which would have essentially forbidden scrambling, and replaced it with one which requires a careful balancing of scrambling against other options.[5] The mechanism which Congress has instructed the Commission to find--a proper balancing between the need for security and the operation of consumer electronics--is already in place, driven by the very market forces the Act adopts as its preferential guidepost.[6]

D. Alternative Security Measures Are Too Costly

There are several security designs which could accommodate present consumer electronics, but only a few are worthy of serious consideration.

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[5]Conf. Rep. 86-88.

[6]Pub. L. 102-385, Sec. 2(b)(2).

Hypothetically, cable systems could refrain from scrambling and rely exclusively on traps. As noted in our Comments in MM Docket 92-262, however, traps are inadequate security measures in most areas; rely heavily on service calls; eliminate the opportunity for impulse pay-per-view purchases (or convenient channel blocking); and create significant interference, ghosting and technical degradation. Converting the industry to positive and/or negative trapping would cost more than $4 billion and would add nearly $2 billion in annual operating costs. Such a move would result in systems with rigid channel patterns, unable to rearrange or add channels without substantial service calls to change traps. Because of certain technical limitations, the ability to offer several tiers of service, pay-per-view or premium services on an a la carte basis would be severely curtailed. In some areas, certain technical limitations inherent

[redacted]

interdiction technology -- and we would still be left with limited capacity, analog systems.

Such "solutions" would pour resources into analog architectures at a time when we are rushing to build a competitive, digital broadband infrastructure.

IV. Another Look At Who Benefits From "High End" TV's

[redacted]

a colossal waste of the consumer's money.

A helpful analogy may be found in computer and home audio equipment. Consumers are not required to buy a new monitor when they wish to change keyboards or CPU's. Those functionalities are separated, so that new technology can be incorporated without discarding still-useful components. Likewise with home audio electronics. Compact disk (CD) players may be plugged into an existing home audio system, without replacing the receiver and speakers. If all features were loaded into a single unit, the entire home audio system would need replacement in order to add any new capabilities such as CD.

Likewise, if all home video features were incorporated into a single unit -- the TV receiver -- then the entire unit would need to be replaced in order to add new capabilities. Placing all functionalities inside the TV receiver is contrary to consumer economic interests and a terrible waste of resources.

B. Technological Developments Should Not Be Held Hostage By Limitations In The Installed Base Of TV Receivers.

Quite simply, cable television distribution technology should not be held hostage to the current installed base of TV receivers, any more than it was in 1972. If a multichannel video provider cannot deploy new services until an entire generation of TV receivers is replaced, new distribution technologies and new services will be confined within the existing limits of the installed consumer electronics base. Such a policy would single-handedly kill research and development into superior distribution technologies.

C. Placing All Functionalities Within TV Receivers Prejudices American Industry In Favor Of Foreign Manufacturers

Recently, Labor Secretary Reich wrote Chairman Quello concerning the need to consider the effects on American workers when the Commission adopts the HDTV standard. We would agree with Secretary Reich and point out that American jobs could also be at peril in this rulemaking if the Commission places the costs and burdens of compatibility entirely on the cable industry and its U.S. suppliers. Outlawing scrambling would be an unusual trade policy: it would almost exclusively benefit French, Japanese, Korean and Taiwanese manufacturers at the expense of U.S. suppliers of sophisticated cable electronics and television programming, at the very moment we should be moving into a U.S.-led world of compression technology.

V. Compression Will Require A Decompression Box

Digital compression will revolutionize video distribution. It can transform a 60 channel system into a 450 channel system, opening customized on-demand video stores in every home, creating advertising niches in every neighborhood, and breaking the bandwidth "bottleneck" through which programming is delivered to the home. But it can only do so if the compressed signal is decompressed at the customer premises to make the signals receivable on a standard TV receiver.

This requirement means that there must be a decompression box on the TV set if the digital revolution is to occur. Since it is not likely that a single decompression standard will be

employed, it is equally unlikely that the decompression equipment will be built into every TV receiver. MPEG II might become the uniform transport scheme, but there will probably not be a single decompression algorithm. In a free market, innovation will compel the development of a variety of decompression techniques and decompression software, and therefore a variety of boxes.

Furthermore, in every currently proposed digital compression system, television signals will be packaged four to six per 6 MHz carrier. While the decompression equipment will be intrinsically capable of decompressing and providing four or more analog signals, only those channels carried in each 6 MHz carrier will be available at any one time. Consumers will not be able to watch one program descrambled from one carrier and simultaneously view (or record) a program descrambled from another carrier unless more than one decompression system is provided. Again, for the vast majority of customers, this will not present any inconvenience. But some customers will want to be able to decompress programs from more than one carrier and two decompression devices will be required no matter what the capability of their TV set or VCR and no matter when they purchased it. Therefore, practically speaking, there will always be a need for a converter box.

Nonetheless, digital compression cannot be held hostage to the TV receiver replacement cycle. Unless cable is permitted to deploy the decompression boxes which make digital compression possible, the public will be caught in the needless limitation of

analog receiver specifications which will be surpassed by advances in distribution technology.

VI. Subscriber Ownership Of Equipment

A. Customers May Purchase Converters And Remotes

In general, Continental is not opposed to consumers owning cable television converters. These and other items can be owned (rather than leased) by subscribers without compromising cable's security. In fact, "cable ready" TV's and VCR's already have such technology built-in, and universal remotes may be readily purchased by consumers and are compatible with the brands or type of converters the device is programmed to control. However, for the reasons stated in Section III and explained further in Paragraph VI. C., we are absolutely opposed to consumers owning descrambling devices.

B. Cable Notices Should Only Identify The Brand Of Converter Employed

To avoid unnecessary costs, notices advising customers of the option of buying remote control devices from third parties should be provided with other notices (privacy and 76.607 complaint notices) which are issued to new subscribers and thereafter on an annual basis. However, the choices are vast: anyone can make such devices using any technology they wish; these devices are not required to be registered with the Commission; and they are not required to meet any Commission specification. We therefore do not believe cable operators can reasonably identify particular brands or models of such compatible equipment. Rather, we should simply note which

converter is used by the cable system with the responsibility for determining compatibility resting with the manufacturers of the remote control devices. See Appendix D, p. 4.

Likewise, converters (not descramblers) may also be readily purchased by consumers, and are compatible with any unscrambled service on cable. (Cable ready TV's and VCR's already contain cable converters). The same notice concerning remotes could

available for third-party supply.[8]

There is no more reason to make descrambling circuitry available to third party suppliers than there is to make banknote stock available in copyshops. Unlike unenacted versions, the 1992 Act recognizes the need for scrambling as a piracy prevention measure, and even increases penalties for theft. It cannot be read as requiring the turnover of the very descrambling technology which would open up the industry to even more rampant theft.

Another compelling reason why descrambling technology cannot be built-in to TV's and VCR's is due to manufacturing economics which would require that a single scrambling system be employed nationally. If such a single descrambling standard were to be selected for inclusion in TV receivers and VCR's, it would become an irresistible target for organized deciphering efforts. Those same economies of scale that make manufacturing the sets and VCR's possible would also work to the advantage of the cable thieves themselves. This actually happened to VideoCipher in the Home Satellite Dish market. Once VideoCipher's VCII encryption system became the single, national standard for the backyard dish market, thieves devoted extraordinary research efforts to breaking the code and succeeded in developing a pirate chip that unlocked the device. Eventually, the entire industry had to replace VCII encryption with VCII Plus, which is now a target of a concerted effort by pirates. Since VCII Plus is expected to be

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[8] 47 U.S.C. § 624A(c)(2)(C).

(and may have already been) broken, the HSD industry is now working on an enhanced version known as VideoCipher RS (VCRS).

D. Remote Windows Must Be Periodically Enabled

Continental agrees that cable operators should not "disable" remote windows on remote capable boxes. However, the Commission should understand that remote windows typically need to be enabled, often repeatedly, such as after power outages. Transaction costs may be required to compensate for such services. Also, due to the large number of consumer devices now controlled by wireless (infrared) remotes, some customers request that this feature be disabled to eliminate interference from other such infrared remote control devices. If the operator is proscribed from disabling such functions under any circumstances (and only cable operators can supply the necessary codes), then some consumers will be harmed.

E. Consumers Should Be Properly Warned About The Limited Expected Life Of Analog Equipment

Continental submits that in "encouraging" subscribers to own their own equipment, the Commission should fashion notices warning consumers of the very different equipment needs of different cable systems, and the very short expected remaining life of analog converter boxes. A customer who buys a converter compatible with the Washington, D.C., cable system will find it of limited use when the system is upgraded or after moving to Queens, New York. A customer who buys any analog converter box, on the eve of a 1994 rollout of digital compression, has probably bought the equivalent of a new LP turntable the year before CD

technology was introduced, or worse, an eight-track tape. A customer who buys a universal remote will shortly find it outmoded compared with the sophisticated remotes associated with 500 channel systems. Such warnings are better placed at the point of equipment purchase, so that customers will be informed about both the usefulness and the expected (short) useful life of such devices.

VII. The Definition Of Cable Ready

Continental concurs with the recommended definitions of "cable ready" submitted by NCTA.

VIII. Recommendations

Continental recommends that the Commission should report to Congress that:

1. Incompatibility between cable systems and consumer electronics is the natural outgrowth of (1) public policies that protect the consumer's investment in existing equipment while at the same time permitting rapid innovation in television distribution technologies; (2) the unregulated internalization of functionalities in the TV receiver and VCR's; (3) unregulated and deceptive marketing of equipment as "cable ready;" (4) a lack of consumer education on the proper installation of consumer electronics which are in fact quite "compatible" with cable.

2. As long as there is technological progress, some type of converter will be required to interface today's distribution systems with an aging population of TV receivers and VCR's.

3. In practice, scrambling itself causes few problems to consumers provided that the equipment hook-ups are done properly.

4. Converters offer numerous advantages to consumers, in particular the ability to benefit from evolving technologies without the need to prematurely replace TV receivers. Converters also prolong the life (and value) of existing TV receivers and VCR's by replacing outmoded tuners.

5. Digital signal transport should not be limited by TV receiver specifications as long as cable operators provide decompression boxes which convert digital signals to standard broadcast channels.

6. Scrambling is an essential security measure which should not be restricted nor internalized into TV receivers nor sold by third parties. The extent of scrambling is in proportion to the amount of signal theft.

7. The most cost effective short-term solutions to analog incompatibility are to:

(d) Vigorously enforce signal theft laws to obviate the need for operators to increase scrambling.

8. Subscribers should continue to be permitted to purchase remotes and converters (but absolutely not descramblers) from lawful third-party suppliers. "Cable ready" should be defined as proposed by NCTA, and disclosures at the point of sale should caution customers about the relatively short useful life of such products.

Respectfully submitted,

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APPENDIX A
FEDERAL COMMUNICATIONS COMMISSION
ET Docket No. 93-7

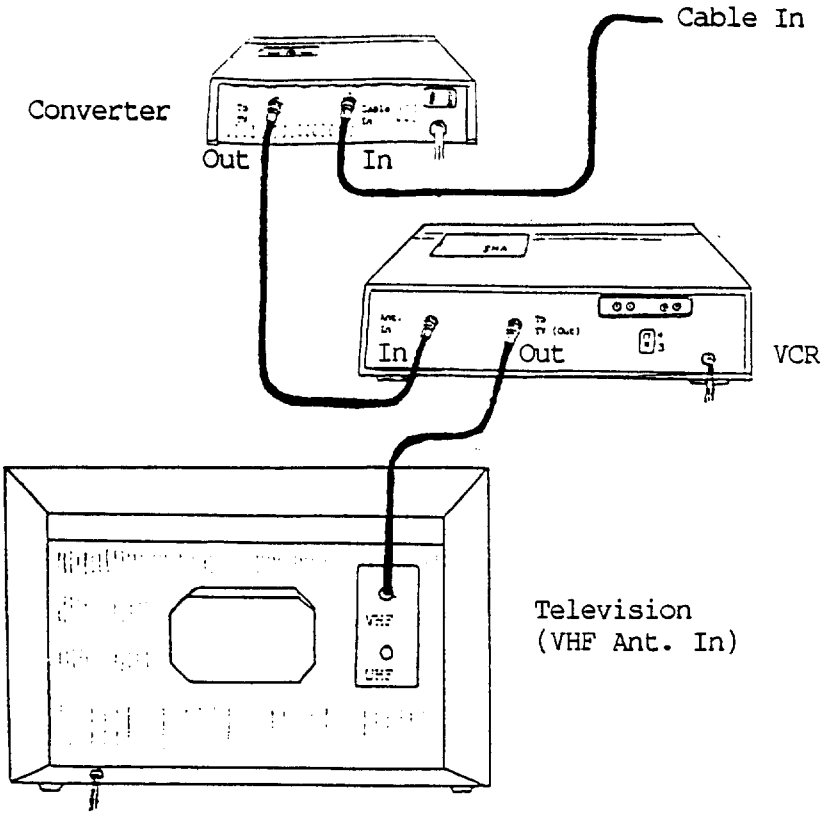
Appendix A

The attached diagrams are typical of those used by Continental Cablevision's systems to interface the customer's equipment. Nearly a dozen different cable hook-ups are needed because customer equipment capabilities and desired services vary considerably. Customers may not have a VCR or may not have a truly "cable ready" TV set or VCR. Some customers may or may not desire a cable converter box (with remote control), and some customers may or may not want certain scrambled channels.

Regardless of whether a cable system scrambles any channels, consumers may have inadvertently hooked up a cable converter box in such a manner to inhibit the full use of their TV set and VCR's capability. Diagram VCR1 is typical of installations done by consumers after they purchase a VCR. Regardless of scrambling, this configuration inhibits many TV and VCR features. Diagram VCR2 shows a similar hook up, but in this configuration, customers can watch any channel while recording any non-scrambled channel. Also, in this configuration, the VCR will record consecutive cable channels.

Diagrams VCR5 through VCR10 show alternative (recommended) installations that reduce the impact of scrambling. Diagram VCR9 shows how two scrambled signals can be recorded and watched. In this configuration, consumers can watch ANY channel while recording ANY channel, regardless of scrambling.

VCR 1



Capabilities: May record any channel while viewing same channel.

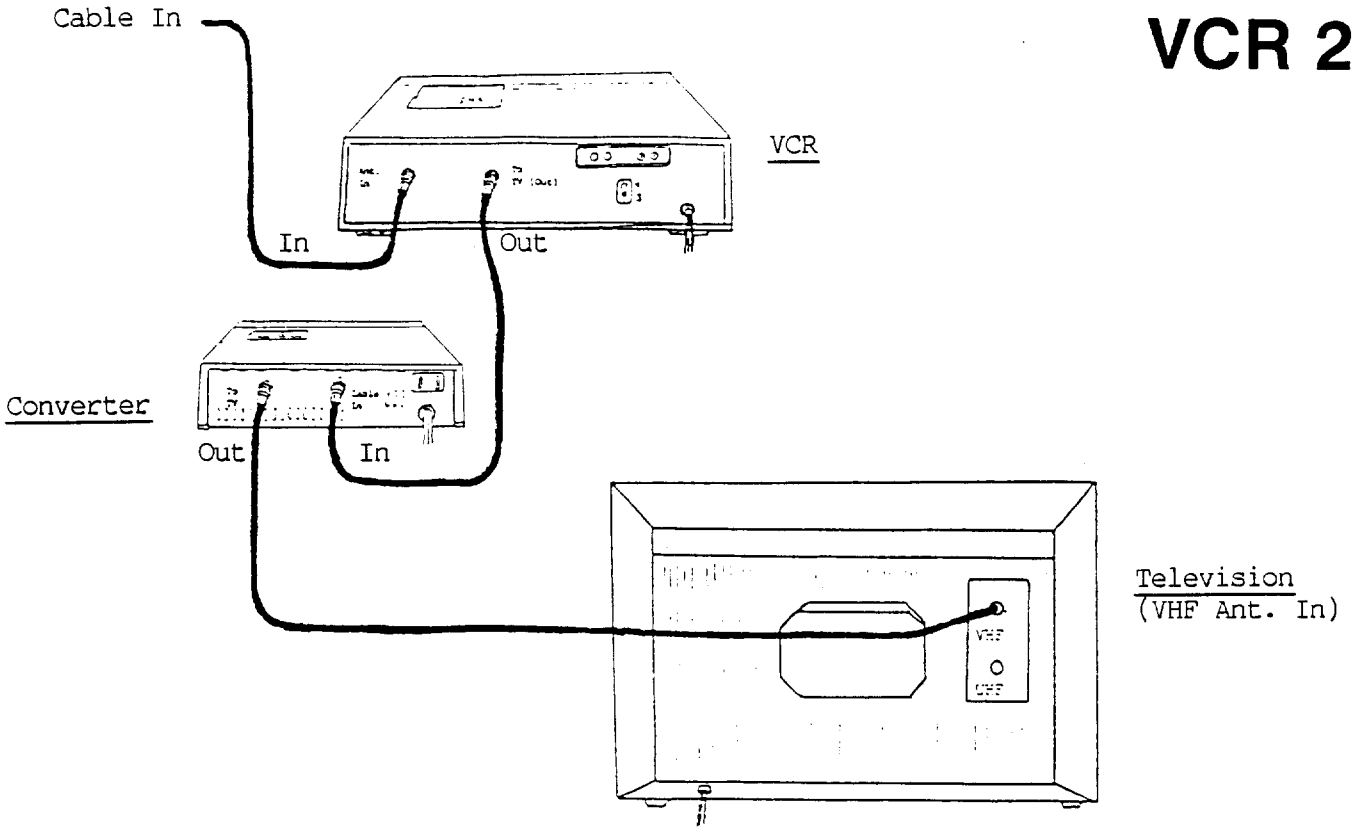
Limitations:
*Can't record one channel, while viewing another.
*Cannot use timer for multi-channel, multi-event, recordings.
*Cannot change channels with the TV remote control. (Remote control converters are available)
*Cannot change channels with the VCR remote control

Recording:

VCR must be on channel 3 at all times.
TV must be on channel 3 at all times.

*The VCR may only record the channel that is displayed on the converter.

VCR 2

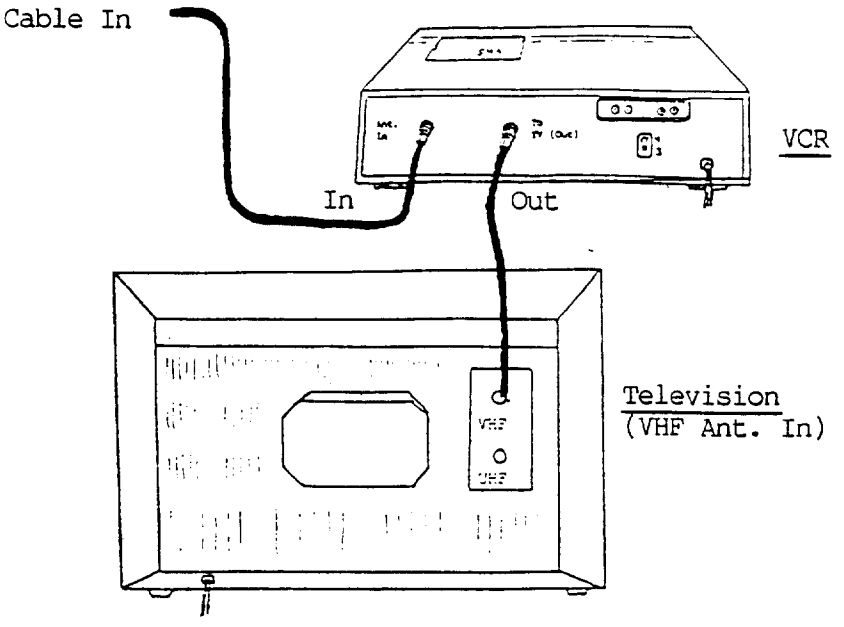


Capabilities: *May record any NON-SCRAMBLED channel while viewing any channel.
*Full use of VCR remote control.

Limitations: *Cannot change channels with the TV remote control. (Remote control converters are available.)

TV must be on channel 3 at all times.
Converter must be on channel 3 to view stations

VCR 3



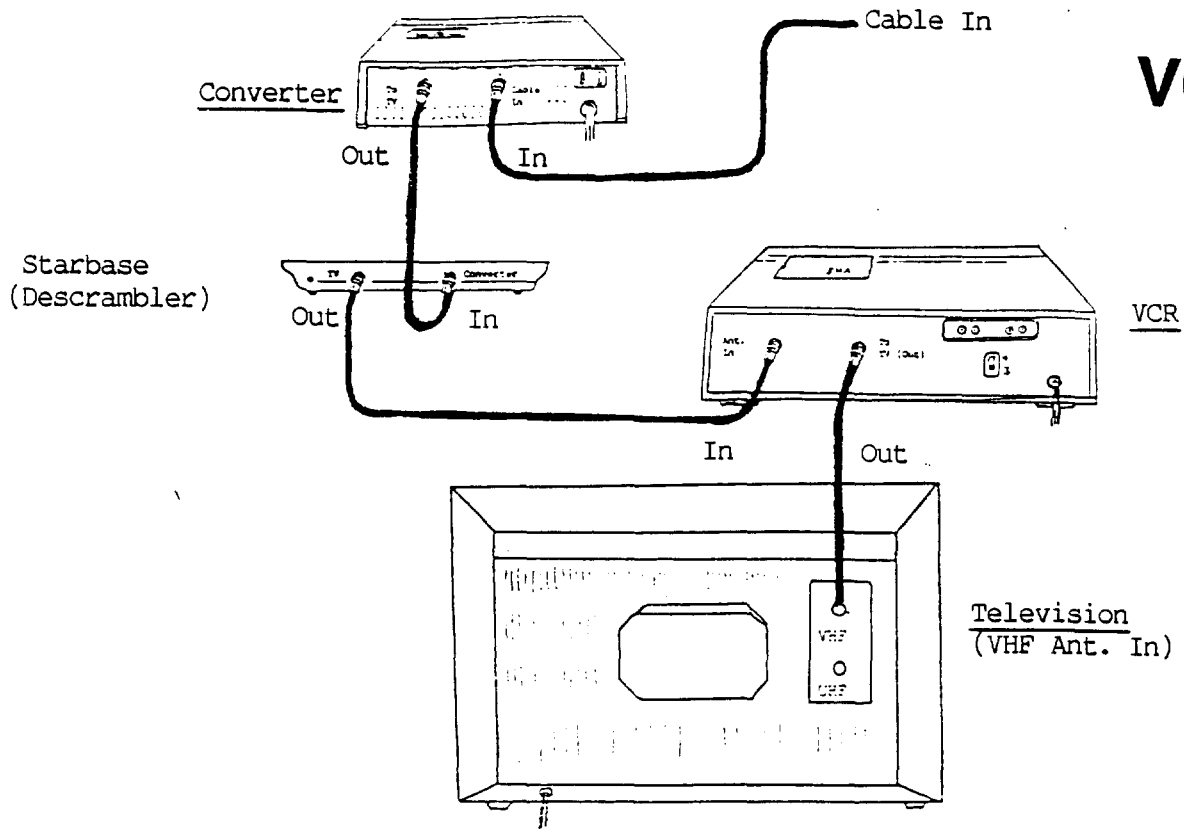
Capabilities: *May record ANY NON-SCRAMBLED channel while viewing ANY NON-SCRAMBLED channel.
*Full use of the TV remote control.
*Full use of the VCR remote control.
*Full use of VCR timer and other functions.

Limitations: *If VCR is <u>not</u> "cable ready," it will only be capable of recording channels 2 through 13.

Directions: *The procedures for recording remains the same as it was before cable TV was installed. However, for some VCR's you must consult with your VCR owner's manual to "pre-set", or "tune in" NON-SCRAMBLED cable channels to enable your VCR to record them.

Note: Cable TV is delivered to you only on <u>VHF</u> frequencies. No cable channels can be "tuned in" on the <u>UHF</u> band.

VCR 4



Capabilities: May record any channel while viewing same channel.

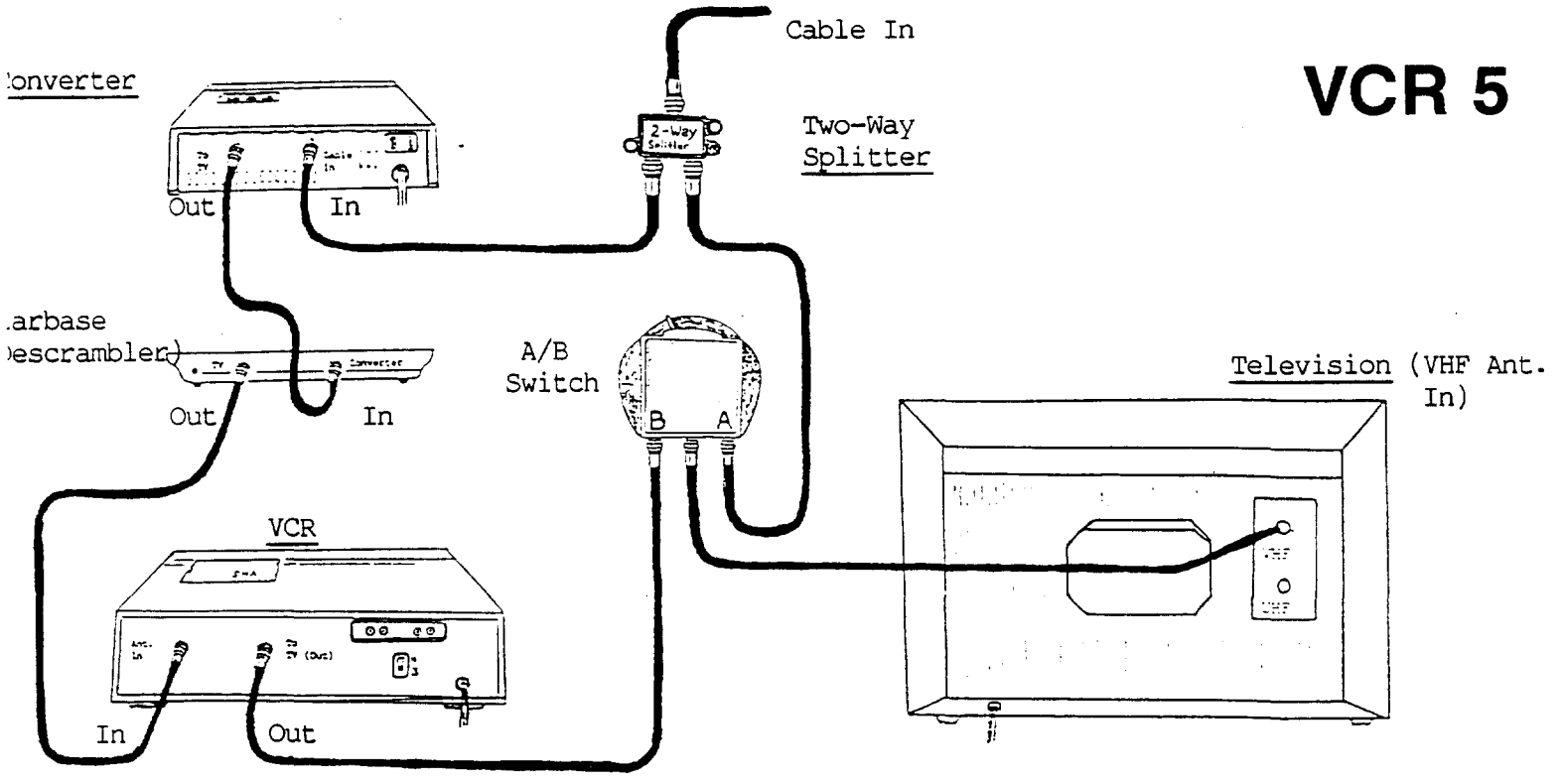
Limitations:
*Can't record one channel, while viewing another.
*Cannot use timer for multi-channel, multi-event, recordings.
*Cannot change channels with the TV remote control. (Remote control converters are available)
*Cannot change channels with the VCR remote control

Recording:

VCR must be on channel 3 at all times. TV must be on channel 3 at all times.

*The VCR may only record the channel that is displayed on the converter.

VCR 5



Capabilities: *May record ANY channel while viewing any NON-SCRAMBLED CHANNEL.
*May use the TV remote control.

Limitations: *Cannot use VCR timer for multi-channel, multi-events recordings (i.e. cannot program VCR to record a movie on channel 5 at 6:00 PM, and then a second program on channel 17 at 8:00 PM). *Cannot change channels with the VCR remote control.

Directions:

VCR must be on channel 3 at all times.
TV must be on channel 3 when A/B switch is set on B.

Functions:

To watch any NON-SCRAMBLED channel: *Set A/B switch to A.

*Use TV's channel selector (or TV's remote control) to select channel.

To watch a SCRAMBLED channel: *Put TV on channel 3.
*Set A/B switch to "B"and select channel on converter.

To record any channel: *Put TV on 3 and set A/B switch to B.

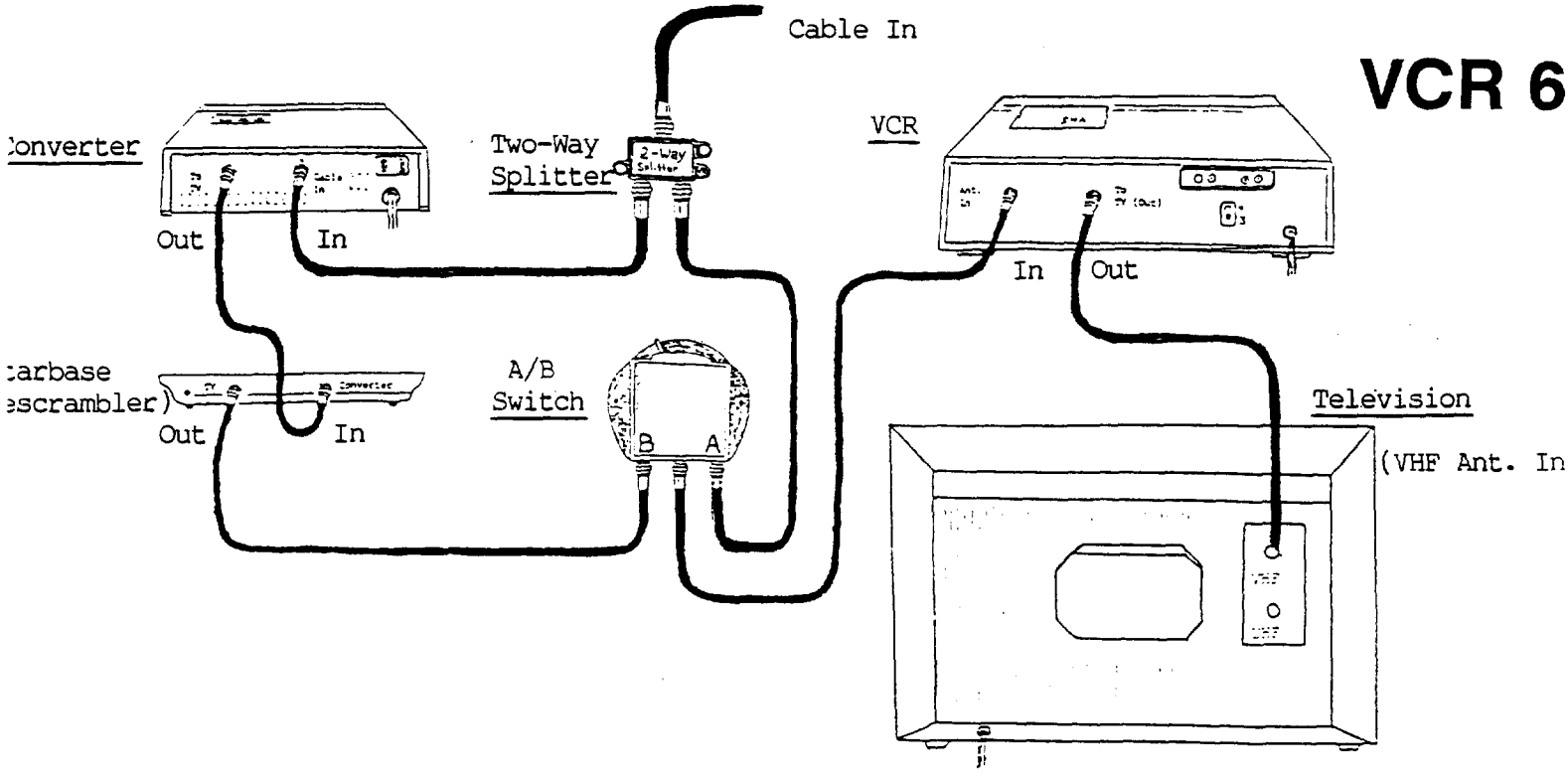
*Select channel on converter to be recorded. *Make Sure VCR is on channel 3. *Start recording or use timer function on VCR.

To watch another channel while recording:

*Set A/B switch to A and use TV's channel selector (or TV's remote control) to view any channel.

To watch a VCR tape: *Put TV on channel 3 and set A/B switch to B
*Play Tape.

VCR 6



Capabilities: *May record any channel while watching any channel.*Full use of the TV and VCR remote controls. *Full use of the VCR timer and other functions.

Limitations: *Cannot record one channel while watching another while the A/B switch is set on "B".

Directions:

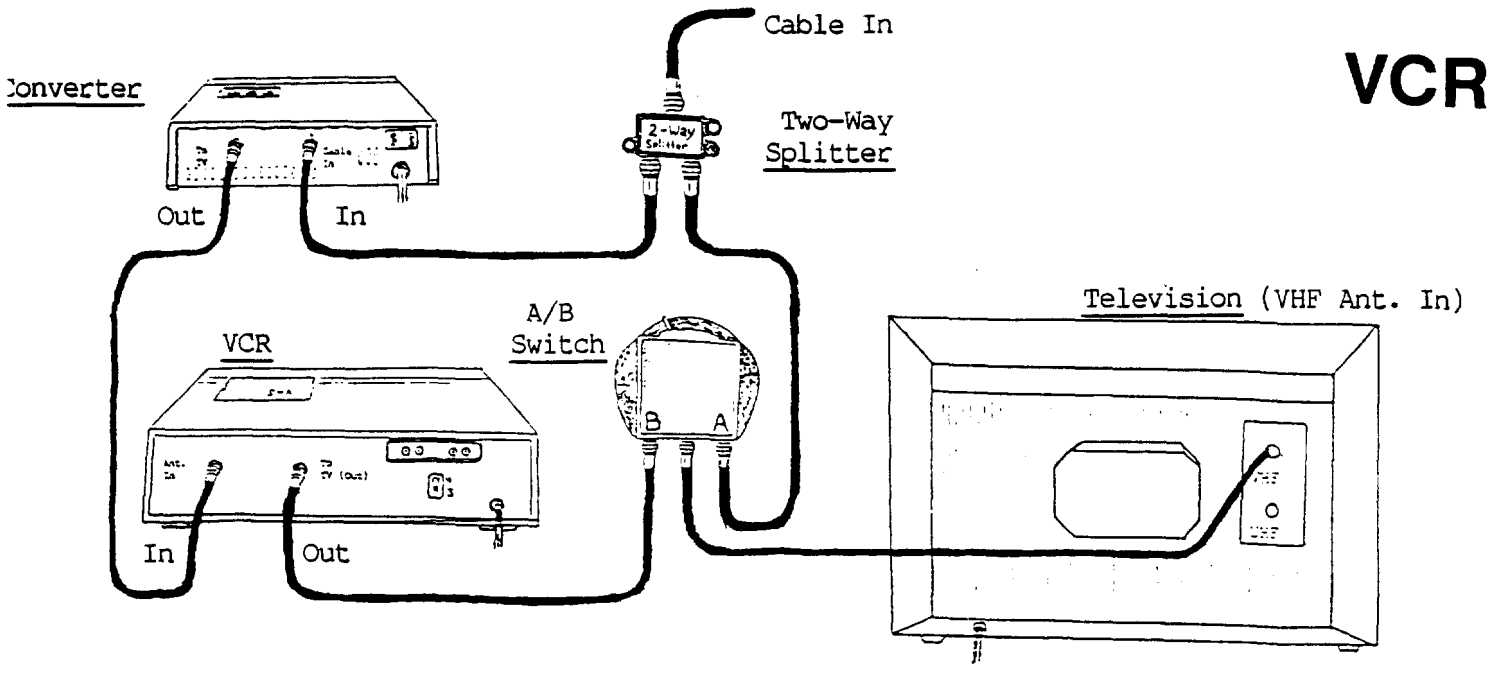
TV and VCR must be on channel 3 while the A/B switch is set on B.

To RECORD or watch any NON-SCRAMBLED channel: *Set A/B switch to "A". *On "A" the procedure for recording remains the same as it was before cable TV was installed. However, for some VCR's you must consult with your VCR owner's manual to "preset", or "tune-in" NON-SCRAMBLED cable channels to enable your VCR to record them.

To WATCH a SCRAMBLED channel: *Put TV on channel 3. * Set A/B switch to "B". *Select the scrambled channel(s) on the converter.

To RECORD a SCRAMBLED channel: *Put TV on channel 3. *Set A/B switch to "B". *Put VCR on channel 3. *Select the scrambled channel on the converter to be recorded. *Start recording or use timer function on VCR. *The A/B switch must remain on "B" throughout this recording.

VCR 7



Capabilities: *May record ANY channel while viewing a different SCRAMBLED CHANNEL.
*May use the TV remote control.

Limitations: *Cannot use VCR timer for multi-channel, multi-events recordings (i.e. cannot program VCR to record a movie on channel 5 at 6:00 PM, and then a second program on channel 17 at 8:00 PM). *Cannot change channels with the VCR remote control.

Directions:

VCR must be on channel 3 at all times.
TV must be on channel 3 when A/B switch is set on B.

Functions:

To watch any channel: *Set A/B switch to A.

*Use TV's channel selector (or TV's remote control) to select channel.

To watch a converter-assisted channel: *Put TV on channel 3. *Set A/B switch to "B"and select channel on converter.

To record any channel: *Put TV on 3 and set A/B switch to B.

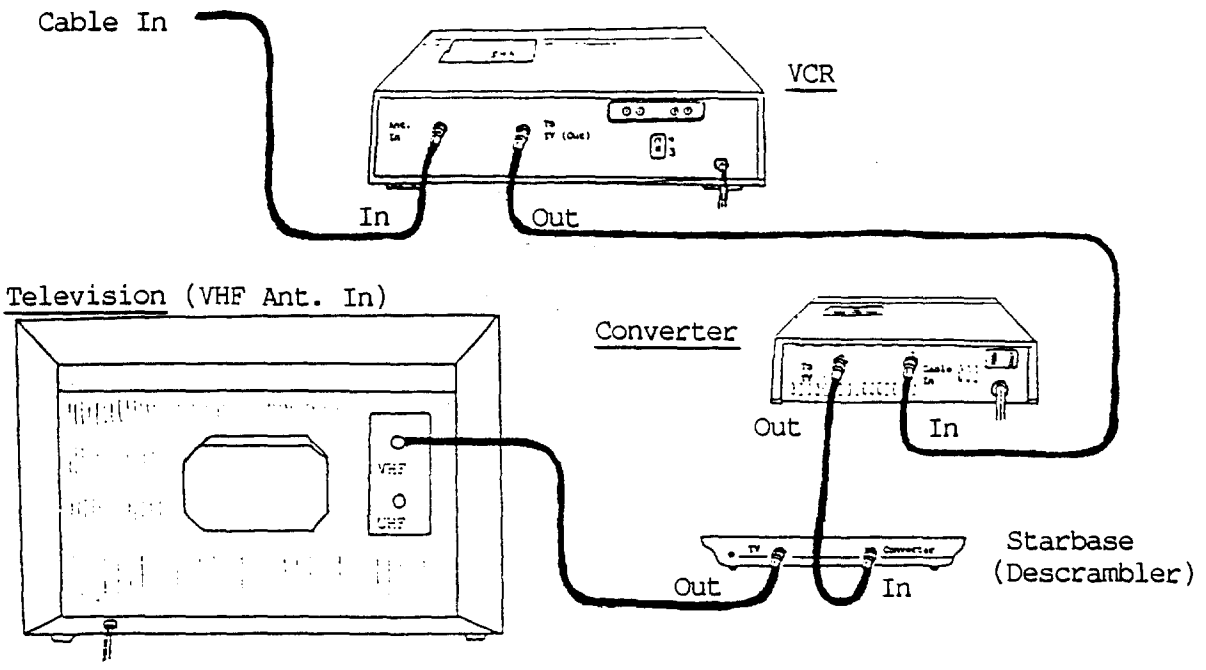
*Select channel on converter to be recorded. *Make Sure VCR is on channel 3. *Start recording or use timer function on VCR.

To watch another channel while recording:

*Set A/B switch to A and use TV's channel selector (or TV's remote control) to view any channel.

To watch a VCR tape: *Put TV on channel 3 and set A/B switch to B *Play Tape.

VCR 8



Capabilities: *May record any NON-SCRAMBLED channel while viewing any channel.
*Full use of VCR remote control.

Limitations: *Cannot change channels with the TV remote control. (Remote control converters are available.)

TV must be on channel 3 at all times. Converter must be on channel 3 to view a tape.

To watch ANY channel: *Use converter to select any channel.

To record pre-set channels:

*Put converter on channel 3. (TV always stays on 3)
*Turn on VCR
*Set TV/VCR switch to "VCR."(TV/VCR switch is located on VCR and/or VCR remote control.)
*Select one of the pre-set channels on VCR to be recorded.
*Start recording or use timer function on VCR.

To watch another channel while recording:

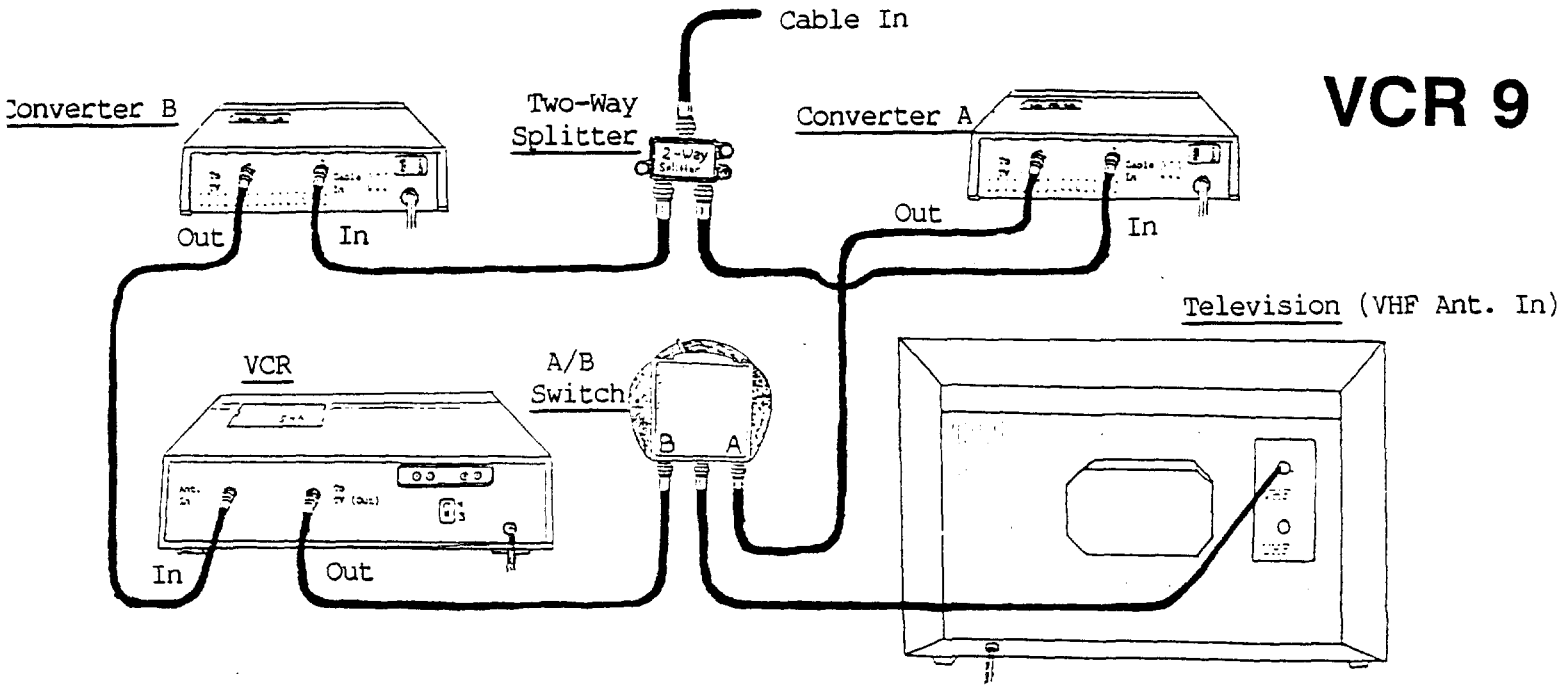
*Set TV/VCR switch to "TV."
*Use converter to select any channel.

To watch a VCR tape:

*Put converter on channel 3.
*Play tape.

Note: If VCR is not "cable ready," it will only be capable of recording channels 2 through 13.

VCR 9

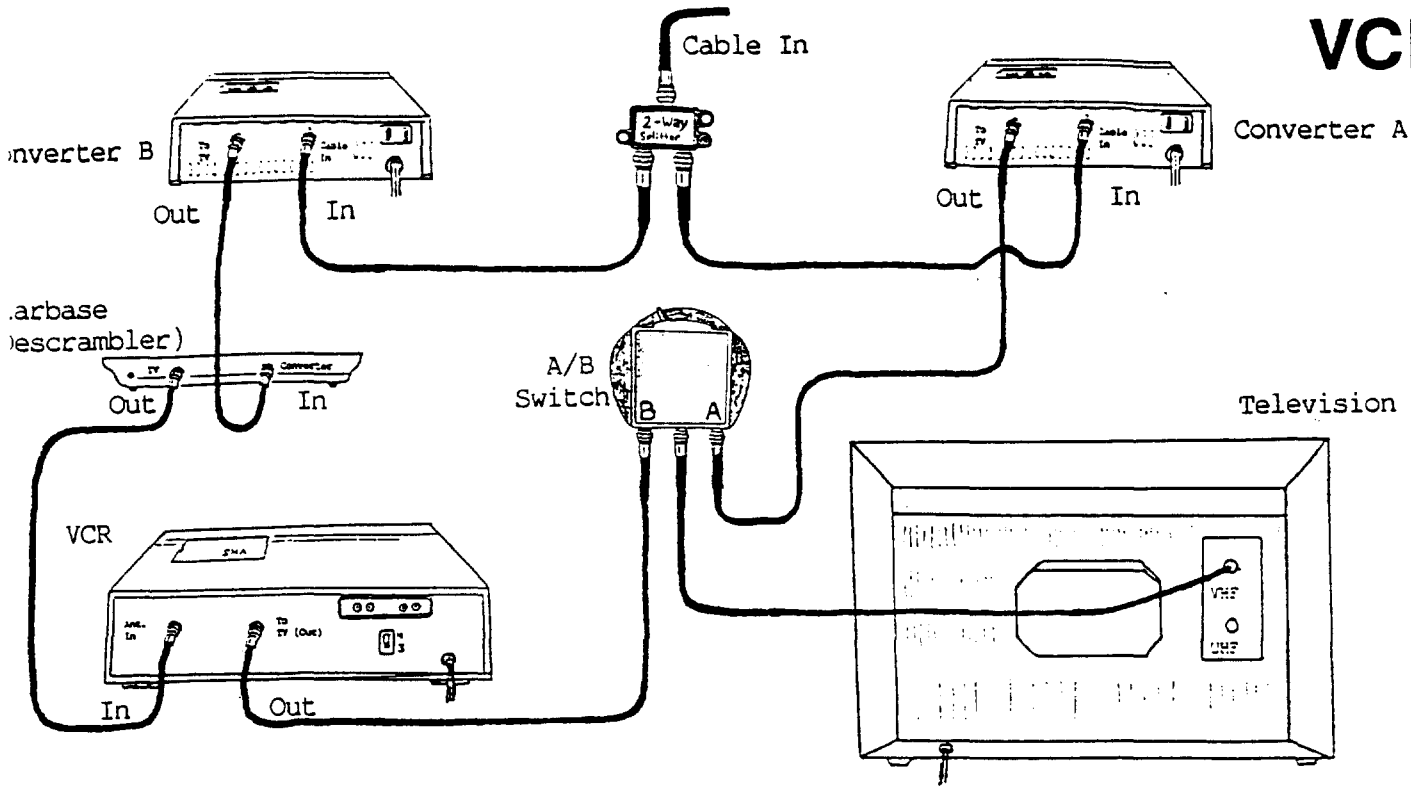


Capabilities: *May record ANY channel while viewing ANY channel.

Limitations: *Cannot use VCR timer for multi-channel multi-event recordings (i.e. cannot program the VCR to record a movie on channel 5 at 6:00 PM, then a second program on channel 17 at 8:00 PM).
*Cannot change channels with the TV remote control (Remote control converters are avaialble.)
*Cannot change channels with the VCR remote control.

Direction:

VCR 10



Capabilities: *May record ANY channel while viewing any NON-SCRAMBLED channel.

Limitations: *Cannot use VCR timer for multi-channel multi-event recordings (i.e. cannot program the VCR to record a movie on channel 5 at 6:00 PM, then a second program on channel 17 at 8:00 PM).*Cannot change channels with the TV remote control (Remote control converters are available.) *Cannot change channels with the VCR remote control. *Cannot record a different channel while watching a scrambled channel.

Direction:

VCR must be on channel 3 at all times. TV must be on channel 3 at all times.

To watch any channel: *Set A/B switch to A.
*Select channel on converter A.

To record any channel: *Set A/B switch to B.
*Select channel to be recorded on converter B.
*Start recording or use timer function on VCR.
*The VCR will only record the channel displayed on converter B.

To watch another channel while recording:

*Set A/B switch to A and use converter A to view any channel.

To watch a tape: *Set A/B switch to B.
*Play tape